

1.4.2 Component Type Variants

| Variant Number | Based on Type | Case | Description | Lead Material and Finish | Weight Max g |
|----------------|---------------|---------|--------------|--------------------------|--------------|
| 01 | BYV54-200 | TO254 | Single diode | H9 | 10 |
| 02 | BYV54-200 | TO254 | Single diode | H4 | 10 |
| 03 | BYV54-200 | TO254AA | Single diode | S9 | 10 |
| 04 | BYV54-200 | TO254AA | Single diode | S4 | 10 |

Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

1.5 MAXIMUM RATINGS

NOTES

3. At $T_{\text{case}} > +90^{\circ}\text{C}$, derate linearly to 0A at $+150^{\circ}\text{C}$ for variant 01 and variant 02.

At $T_{\text{case}} > +99^{\circ}\text{C}$, derate linearly to 0A at $+150^{\circ}\text{C}$ for variant 03 and 04.

Justification :

For variant 01 and 02

Calcul of the derating is wrong:

For max rating 40A we have used f_{max} at 30A instead of 40A with $I_{\text{O max}}$ at 30A.

The right calculation is:

for $I_{\text{O max}}$ 40A, $V_{\text{f max}} = 1.5\text{V}$ (issued from ST data characterization).

Formula applied:

$$\text{Max power derating} = T_{\text{j}} - (I_{\text{o}} \times V_{\text{f}} \times R_{\text{th(j-c)}}) = 150 - (40 \times 1.5 \times 1) = 90^{\circ}\text{C}$$

The new limit for the derating is 90°C

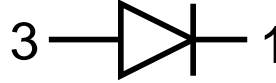
For variant 03 and 04

$$\text{Max power derating} = T_{\text{j}} - (I_{\text{o}} \times V_{\text{f}} \times R_{\text{th(j-c)}}) = 150 - (40 \times 1.26 \times 1) = 99^{\circ}\text{C}$$

1.8 FUNCTIONAL DIAGRAM

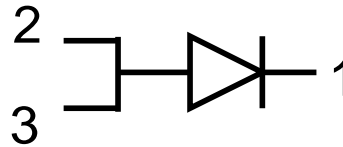
Variant 01 and variant 02

Terminal 1 : Cathode
Terminal 2 : N.C.
Terminal 3 : Anode



Variant 03 and 04

Terminal 1 : Cathode
Terminal 2 : Anode
Terminal 3 : Anode



Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

2.4.1 ROOM TEMPERATURE ELECTRICAL MEASUREMENTS

| CHARACTERISTICS | SYMBOL | MIL-STD-750 TEST METHOD | TEST CONDITIONS Note 5 | LIMITS | | UNIT |
|-----------------|-----------------|----------------------------|---|--------|-------------|------|
| | | | | MIN. | MAX. | |
| Forward Voltage | V _{F1} | 4011 | Pulse Method I _F = 20 A, Note 1 Variant 01 and 02 Variant 03 and 04 | - | 1.1 0.95 | V |
| | V _{F2} | 4011 | Pulse Method I _F = 30 A, Note 1 Variant 01 and 02 Variant 03 and 04 | - | 1.3 1.1 | V |

Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

2.4.2 HIGH AND LOW TEMPERATURES ELECTRICAL MEASUREMENTS

| CHARACTERISTICS | SYMBOL | MIL-STD-750 TEST METHOD | TEST CONDITIONS Note 4 and 5 | LIMITS | | UNIT |
|-----------------|-----------------|----------------------------|---|--------|-------------|------|
| | | | | MIN. | MAX. | |
| Forward Voltage | V _{F1} | 4011 | T _{case} =+125(+0 -5)°C Pulse Method I _F = 20 A, Note 1 Variant 01 and 02 Variant 03 and 04 | - | 1 0.85 | V |
| | | | T _{case} =-55(+5 -0)°C Pulse Method I _F = 20 A, Note 1 Variant 01 and 02 Variant 03 and 04 | | 1.3 1.15 | V |
| | V _{F2} | 4011 | T _{case} =+125(+0 -5)°C Pulse Method I _F = 30 A, Note 1 Variant 01 and 02 Variant 03 and 04 | - | 1.1 1 | V |

Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

2.4.3 Notes to Electrical Measurements Tables

note 5 added: For Variant 03 and 04 measurement done when pin 2 and 3 tied together.

Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

2.5 PARAMETER DRIFT VALUES

note 2 added: For Variant 03 and 04 measurement done when pin 2 and 3 tied together.

Justification :

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer

2.6 INTERMEDIATE AND END-POINTS ELECTRICAL MEASUREMENTS

| CHARACTERISTICS | SYMBOL | LIMITS | | UNITS |
|---|----------|--------|-------------|-------|
| | | MIN. | MAX. | |
| Forward Voltage 1 Variant 01 and 02 Variant 03 and 04 | V_{F1} | - | 1.1 0.95 | V |

note 1 added: For Variant 03 and 04 measurement done when pin 2 and 3 tied together.

Justification :

Variant 02: new variant introduction with TO254 package for European customer

Variant 03: new variant introduction with TO254AA low ohmic package for European customer

Variant 04: new variant introduction with TO254AA low ohmic package for European customer